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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/561,246

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Hideki Sato

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EXAMINER

CHEN, KEATH T

ART UNIT

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/561,246	<b>Applicant(s)</b> SATO ET AL.	
	<b>Examiner</b> KEATH T. CHEN	<b>Art Unit</b> 1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 12 October 2007.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-3 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                       | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>11/13/2007</u> .  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### *Response to Amendment*

The claim amendment filed on 10/12/2007, addressing claims 1-3 rejection from the first office action (07/12/2007) by amending claim 2 is acknowledged and will be addressed below.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
  2. Ascertaining the differences between the prior art and the claims at issue.
  3. Resolving the level of ordinary skill in the pertinent art.
  4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
1. Claims 1 and 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harano et al. (US 5009922, hereafter '922), further in view of Ichikawa et al. (JP3193868, hereafter '868) and Shintani et al. (JP4350157, hereafter '157).

'922 teaches some limitations of claim 1:

A production device (Fig. 3, #1) for producing a multicomponent film from a vaporizing material (#3) of an alloy containing at least two sorts of metals or

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intermetallics compound (col. 10, lines 24-26) by a melting-evaporation type ion plating method (col. 1, lines 20-24) which melts and evaporates the material from a single crucible or hearth (#4) with use of plasma (#14) converged by an electric field or a magnetic field, the device having an electric power supply unit (#7) for melting and evaporating the material and a plasma control unit (#15) for controlling the electric field or magnetic field.

'922 does not teach other limitation of claim 1:

Characterized in that said electric power supply unit (#7) is a sequentially increased electric power supply unit which supplies first electric power necessary to evaporate the material (#3) and then supplies electric power increased stepwise from the first electric power at predetermined intervals repeatedly up to necessary maximum electric power to sequentially melt an unmelted portion of the material, and said plasma control unit (#15) performs plasma control for converging the plasma (#14) into a first plasma region necessary to evaporate the material (#3) and performs plasma control for continuously and sequentially moving and expanding the plasma from the first plasma region up to the maximum plasma region to sequentially melt the unmelted portion.

'868 is an analogous art in the field of forming a transparent conductive (English abstract, line 2; '922, ITO formation, col. 10, lines 48-50), particularly in solving the problem of uniformity (English abstract, last two lines; '922, col. 14, lines 9-13). '868 teaches a method of increasing power supply (Fig. 2) to improve the uniformity of the thin film. Notice the region between 2 and 3 in the x-axis (the ramp portion) can be

represented as many small steps of incremental increase of power up to a maximum plasma region (at region 3 and beyond).

'157 is an analogous art in the field of PVD for producing a thin film (English abstract), particularly in solving the problem of uniformity. '157 teaches a way to control the size of plasma focus area (Fig. 2) by moving in the radial direction to improve film forming efficiency ([0015]) and which direction to move depends on application.

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to have combined '868 and '157 with '922. Specifically, to have adopted the power increase steps as taught in Fig. 2 of '868 and applied to the apparatus as taught in Fig. 3 of '922, for the purpose of improving film uniformity; and to have adopted the magnets focus control device taught in Fig. 2 of '157 to replace the single magnet (#5) of Fig. 3 of '922, for the purpose of improving film forming efficiency, with reasonable expectation of success. With only two directions to test (gradually move the magnets 6a-d in or out), and the common knowledge that the components of a bimetal alloy vaporize at different rates, it would be obvious for a person of ordinary skills in the art to figure out expanding the plasma region would have produced more uniform film.

Claim 2 is rejected with substantially the same reason as claim 1 rejection above. Moreover, the control unit (#15 of '922) has to simultaneously converging the plasma (otherwise the plasma won't evaporate the melt #3) and to sequentially melt the unmelted portion (unmelted portion is sequentially melted).

2. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over '922, '868, and '157, further in view of Shima et al. (JP 2001001202, hereafter '202).

'922, '868, '157, together, teaches all limitations of claim 2, as discussed above.

'922, '868, '157, together, do not teach the limitation of claim 3:

A cutting tool base material of a high-speed tool steel, a die steel, a cemented carbide, a cermet or the like and a coating film of a nitride, a carbide, a boride, an oxide or a silicide containing a plurality of metallic elements and formed on the base material by the method of claim 2.

'202 is an analogous art in the field of PVD (ion plating, English translation, [0004], line 9). '202 requires a thin film formation apparatus and method for the thin film (including nitride, abstract) formation on tools ([0001], last line, high degree-of-hardness steel) to improve the cutting life and oxidation resistance of the tool.

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to have combined '202 with '922. Specifically, to have applied the method taught by '922, '868, and '157, to cutting tools as taught by '202, for the purpose of improving cutting life and oxidation resistance, with a reasonable expectation of success.

### ***Response to Arguments***

Applicant's arguments filed 10/12/2007 have been fully considered but they are not persuasive.

1. Applicant's arguments that scanned error in claim 1 is not in the originally filed copy, see the fourth paragraph of page 4. This has cleared the record and the claim objection is withdrawn.

2. Applicant's arguments on 35 USC 103(a) rejection of claims 1 and 2 based on '922, '868, and '157, see the last paragraph of page 4 to the top 2 lines of page 7, applicant's argument is that '157 does not teach "sequentially moving and expanding the plasma from the first plasma region up to the maximum plasma region".

This is found not persuasive. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

'868 teaches the "sequentially moving and expanding the plasma from the first plasma region up to the maximum plasma region", as discussed in the first complete paragraph of page 4 from the first office action. Referring to Fig. 2 of '868, after many small steps of increasing RF power from region 2 to region 3, and arrived at the maximum plasma region at region 3 and beyond.

3. Applicant's arguments on 35 USC 103(a) rejection of claim 3, see page 7, is based on the defect of '157 as discussed above.

This argument is not persuasive because attacking '157 reference individually cannot show nonobviousness, as discussed above.

4. In regarding to applicant argument that nonstatutory obviousness-type double patenting, Applicant's expressly abandoning US Application No. 10/561,248 overcome the double-patenting rejection.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KEATH T. CHEN whose telephone number is (571)270-1870. The examiner can normally be reached on M-F, 8:30-5:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Cleveland can be reached on 571-272-1418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/K. T. C./  
Examiner, Art Unit 1792

/Michael Cleveland/  
Supervisory Patent Examiner, Art Unit 1792